

POSSIBLE EXPLANATIONS FOR
THE LOCATIONS AND CONCENTRATIONS
OF ETHNIC GROUPS IN HAMILTON

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ABSTRACT

The purpose of the research is to observe and describe the ethnic composition of Hamilton, using 1986 census data. To identify salient spatial trends, two main types of analyses are employed: The Segregation Index and the Location Quotient. Elementary statistics, such as mean and percentages were also calculated. Eight ethnic groups and 88 census tracts were used. These techniques involved the use of 'ethnic origin' data, from Canada's 1986 census. This was the first enumeration that included multiple ethnic origins, previously only the single, paternal lineage was recorded. The research demonstrates that Hamilton's ethnic groups exhibit varying degrees of clustering. The city can therefore, be described as a cultural mosaic, with high concentrations of ethnic groups occurring throughout. Conclusions shall be reached as to the possible causes of the observed patterns and shall be related to the choices and constraints of the particular ethnic groups involved.

ACKNOWLEDGEMENTS

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CHAPTER 1: INTRODUCTION

Hamilton is a classic North American, industrial city. The numerous waves of immigration that have occurred in Canada have greatly influenced the city's multicultural character. This study will examine the spatial patterns of the ethnic groups found in Hamilton, in order to show that ethnic groups are concentrated into 'nodes', or in other words, there are levels of social segregation in Hamilton.

Ethnic groups often hold on to their cultural attributes, either through their own choice or by pressure from the cultural-norm. This factor alone, accounts for many of the patterns observed in Hamilton. The existence of Hamilton as an industrial centre, was a major draw for many immigrant groups to this area. The economic boom occurring at the turn of the century, associated with the formation of Stelco, attracted people from all over the world. This ethnic diversity has even increased since the post WW II period.

The majority of the ethnic groups attracted to Hamilton were from Great Britain or from the European mainland. More recently, people from Asia, Africa, and South America, have added to the ethnic diversity of the city. It is this multiple ethnic background that has developed a cultural mosaic in Hamilton.

For this paper, the definition of ethnic origin, shall be defined as "the ethnic or cultural 'roots' or ancestral origin(s) of the population and should not be confused with

citizenship or nationality."¹ The term segregation does not necessarily denote any negative connotations, its use merely delineates differences in the proportions of ethnic groups found per geographical area.

The resulting population configuration, is displayed in both tabular and graphic form. This was achieved by manipulating certain statistical tests. The two that are integral to this study, reflect how groups and areas in the city differ. The techniques are, the Index of Segregation (SI) and the Location Quotient (LQ).

The Index of Segregation describes how segregated X-ethnic group is from Y (X & Y could either be; two different social groups or X could be one group and Y could be the total population). Location Quotient studies asks the question - How residentially segregated is an area? These two tests are similar but not interchangeable. They can uncover many interesting facts about a population and consequently, will be employed extensively in this study. Similarly, descriptive statistics such as; mean, proportion, maximum and minimum, are employed to further the above results.

Spatial patterns can be brought down to three primary forms. The first is uniform. This pattern suggests a homogeneity of the underlying variables. Another pattern is

¹. 1986 Census of Canada, Ethnic Diversity in Canada, by Pamela M. White, Published under the authority of the Minister of Regional Industrial Expansion, 1990.

random. In this case, it appears as if there is no logical or consistent relationships between the underlying variables. The third and considerably more common pattern is **clustered**. When a clustering pattern emerges, it hints towards some sort of relationship between the variables used. Clustered formations provide most of the challenges for spatial analysis. In geographical population studies, it is often this pattern that emerges. In fact, according to the hypothesis, ethnic groups in Hamilton should portray some degree of concentration or clustering characteristics.

CHAPTER 2: LITERATURE REVIEW

Considerable research has been published on topics related to ethnic groups and their segregation. Sociologists and geographers are both concerned with the origins and consequences of this phenomenon. Segregation by socio-economic status (SES) and income, although related to ethnicity, will not be the main thrust of this study. However, income levels and SES will be discussed as a portion of the possible explanations for the resulting spatial patterns. Residential differentiation, also is an extremely studied subject and is therefore a valuable resource.

There is heated debate in the academic world over the notion of whether choices or constraints better predict ethnic clustering patterns. Marxists state that constraints, imposed by the ruling class, are most important, and others, mainly Weberian's, would disagree. Recently, more researchers realize it is usually a balance between the two forces. One such proponent of this argument is Peach et al (1981);

"...while it is appropriate and helpful to separate the positive and negative aspects of segregation for analytical purposes, it is more conceptually satisfying to envisage a state of tension between the two, wherein ethnicity is more or less likely to be adopted as a principle of social organization and spatial behaviour, depending on a much wider range of variables."
(pp. 14-15)

According to Boal, who used Belfast Ireland as his study area, there are four main reasons why societies **choose** to segregate:

1. A defensive role for the group. If a person decides to join such a group, they are less isolated from other members and if need be, a defense could easily be organized.
2. They choose to stay in the ethnic area because they might feel 'more at home' than in the foreign world.
3. They choose to segregate because they simply want to preserve and promote their own culture.
4. A spatial clustering of a certain group can provide the basic framework for action with the outside world.
(Boal 1972; 1976)

As stated in the introduction, this study adopts one primary assumption; the term segregation will not denote any negative connotations. In fact, to use Kantrowitz's words, "segregation is neither good nor bad, it can just 'be' - a spatial expression of a collective identity" (Peach et al, 1981: p 12).

Most geographers, when discussing ethnic group patterns, are concerned with the relationship between social distance and physical distance. Robert Park was one of the founder's of this discipline, being the first to show correlations between the two distances (park, 1925). In other words social distance is some function of physical distance (Social Distance = f (Physical Distance)). In the present study, where possible, this characteristic has been emphasized.

Whenever generalizations regarding human behaviour are hypothesized, assumptions are encountered. Most behavioural models assume that humans seek to optimize their environments and yet they must also think rationally. Human behaviour however, does not always follow this guideline. Thus, when

using behavioural models, tends to have its limitations. One goal of this thesis, will be to minimize the affects of these characteristics. This can be accomplished by adopting two statistical tests, each of which, are able to cross reference the other. These statistical designs shall be discussed in following sections.

2.1: HISTORICAL PERSPECTIVE

In the 1920's, interest arose surrounding the growth and decay of cities. In 1925-6 a comprehensive study was published by Burgess and Park. Burgess assumed an original state of ethnic segregation, consisting of the new and relatively poor immigrants. As cities expanded outward in rings, these groups inhabited the decaying, low-income, inner city ring.

Since that time, Burgess' model has been greatly criticized, nevertheless, many of his themes are still reflected in a number of residential patterns. For example, the economically-poor and decaying sections of many urban centres, are still occupied by impoverished, newly-arrived immigrants. Hence, some of Burgess' statements still retain certain levels of credibility.

Park was instrumental in connecting social and physical distance (Park, 1926). Park and his students initiated and preserved the social theories pertaining to

Human Ecology. This argument states that a city is divided into 'natural' areas - Italian neighbourhoods, Polish areas, etc., and this is established through competition. He compared this process to plant succession. This theory distinctively downplays human culture. Park feels that nothing can be done to stop segregation from occurring in cities, as it is a natural process.

Kantrowitz argues that as time passes, a certain ethnic group may not become less segregated, as many scholars believe. He repeatedly states that there is a strong voluntary component to the patterns of residential segregation. Kantrowitz is therefore a strong supporter of the 'choice' aspect of residential mobility and thus, disagrees with the constraints postulated by Marxist ideology (Krantrowitz, 1981).

Duncan and Duncan, with their very influential 1955 Chicago study, developed what became the standard measurement of segregation. They equally balanced the ideas of choices and constraints and concluded that the major influence upon a person depended on the social group to which he/she belonged. They found that higher income groups usually had more choices and the lower income groups had more constraints. Segregation was highest between groups at the extremes of the S.E.S., or in other words, a U-shaped pattern emerges.

More recently, other researchers have again stated that a balance exists, however tenuous, between the opposing

forces of choices and constraints (Peach et al, 1981; Ley, 1983; Breton et al, 1990). In the present study, the above framework will be adopted, therefore a minimal bias will be incurred.

2.2: METHODOLOGY

As stated above, the major contributors to the measuring of social differentiation were Duncan and Duncan (1955). They developed the Index of Dissimilarity and the Segregation Index (ID and SI). These statistics measure the degree to which groups of people are respectively dissimilar or segregated from each other. Due to the sheer simplicity and ease of comparison when using these statistics, they have been manipulated quite extensively. The ID and SI are measured between 0 and 100; where 0 denotes the absence of any quantitative level of segregation and 100 means absolute segregation. Since these values are similar to percentages, they are easy to comprehend and can usually be used by the general population. The index of segregation will be a predominant method of evaluation for this paper.

Even though this technique has been embraced quite readily by the academic world, it has one primary weakness. SIs cannot take into account relative populations of people per geographical area (i.e. it has problems with composition-based measures). Lieberman (1980), and others have

incorporated the ID or SI with relative numbers built in. Thus, a non-symmetrical view of segregation is adopted. In this framework, X's isolation from Y may not be the same as Y's isolation from X (Liebersohn, 1963). Consequently in this study, not only are SI's calculated, but the measurement of Location Quotients (LQ) are also computed.

Location Quotients, although similar to the measurements of ID's and SI's, focus on residential **areas** not **groups**. Usually, LQ's are concerned with comparisons between sub-areas of a city to the city as a whole. These measurements take into account relative proportions of the ethnic groups per geographical area and therefore reinforce the SI values.

2.3: DATA SOURCE AND SCALE OF ANALYSIS

For this study, the scale of analysis is at the census track^t level. The chief data source is various 1986-90 census documents. Using this source is not a new phenomenon to ethnicity studies, in fact, census data is standard. The main reasons for this are; it is a very reliable data source and it can easily be compared to different areas of the world. However, there are weaknesses. Census tract boundaries and official census definitions change over time and thus, historical comparisons are often difficult to accomplish. Another limitation is that data collected by census studies

is not always consistent with succeeding surveys. An example of this is in Canadian studies of 1976 and 1981. In the former, ethnic groups were not divided the same way as in the latter, and again in 1986, the groups were changed. This causes difficulties in chronicling previous investigations. Consequently, this study will almost exclusively be concerned with the 1986 Canadian Census for Hamilton. The census definition utilized is entitled, 'ethnic group' (Refer to the Introduction (p.1) for the definition). This definition has also been employed quite extensively by other academics and most recently by Breton et al, 1990. They conducted studies using census data from the beginning of this century to 1981. It is after this date in Canadian census', that the question relating to the ethnic group to which a person belonged, was modified to allow for multiple responses. Therefore, comparisons to earlier studies would be riddled with inconsistencies. This study then, only when the data will allow, compare some of the statistics of the previous censuses.

Since countless studies have used SI measurements and have census statistics as their data source, this thesis can easily be defended for its relevance. A past master's thesis (Rahman (M.A.), 1977), has even been concerned with the spatial clustering and dispersion of Hamilton's ethnic groups. However, she could not take into account the present patterns as this study does. Similarly, she used Factorial Ecology

statistics and not SI & LQ statistics. However, a major portion of Rahman's paper has direct relevance to this study and it will be referenced considerably. Thus this paper, which deals predominantly with SI and LQ statistics, and uses the new definition of 'ethnic origin' from the 1986 Census, is although not isolated, is still unique.

CHAPTER 3: RESEARCH METHODOLOGY

3.1: DESCRIPTION OF DATA

The database utilized is from the 1986 Canadian Census; Profiles, Hamilton: Part 2. The scale of analysis is at the census tract level. Data will be obtained only for the census tracts of the City of Hamilton, and not for the surrounding Hamilton-Wentworth County (Map 1). Therefore, the sample size used for the calculations, is 88 (Census Tracts 001.01 to 72.04 - Refer to Table 1). The reasoning for concentrating only on the city's census tracts, lies in the assumption that most ethnic groups will likely be concentrated in the city itself. The source of data will be from the 'ethnic origin' section of the census tract database.

3.2: METHODOLOGICAL TECHNIQUES

The census tract statistics employed will consist of those respondents who indicated a "single origin" only, on the census questionnaire. The 1986 census was the first time that Statistics Canada allowed for multiple origin responses. Previous census enumerations only recorded a single paternal lineage, therefore difficulties arise when comparing censuses prior to 1986.

MAP 1: Census Tract boundaries for Hamilton, 1986.

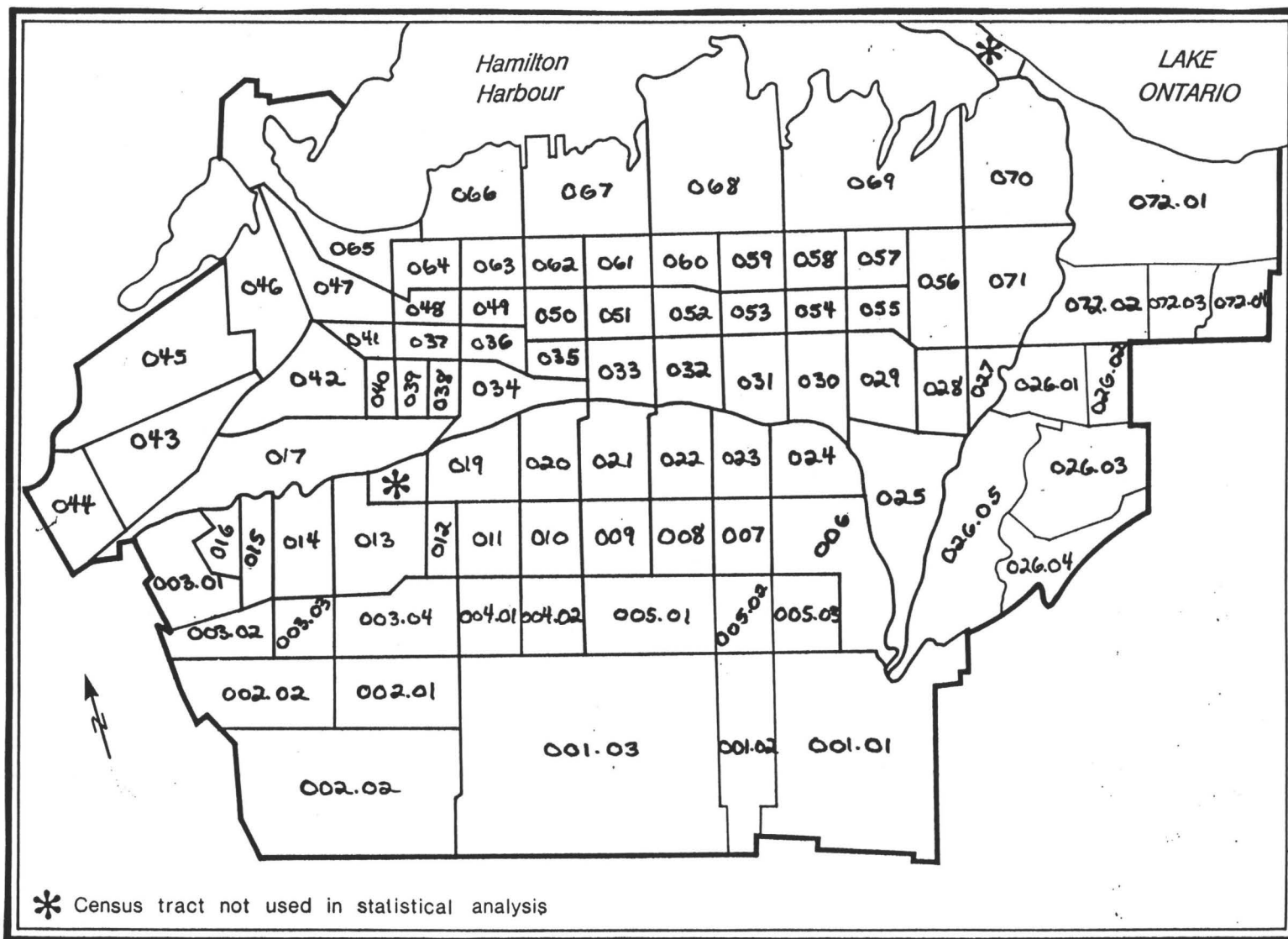


TABLE 1: - Census Tracts and their corresponding values used for the Scatter Graphs.

CENSUS TRACTS	CORRESP. VALUES	CENSUS TRACTS	CORRESP. VALUES	CENSUS TRACTS	CORRESP. VALUES
001.01	1	022	31	048	61
001.02	2	023	32	049	62
001.03	3	024	33	050	63
002.01	4	025	34	051	64
002.02	5	026.01	35	052	65
002.03	6	026.02	36	053	66
003.01	7	026.03	37	054	67
003.02	8	026.04	38	055	68
003.04	9	026.05	39	056	69
004.01	10	027	40	057	70
004.02	11	028	41	058	71
005.01	12	029	42	059	72
005.02	13	030	43	060	73
005.03	14	031	44	061	74
006	15	032	45	062	75
007	16	033	46	063	76
008	17	034	47	064	77
009	18	035	48	065	78
010	19	036	49	066	79
011	20	037	50	067	80
012	21	038	51	068	81
013	22	039	52	069	82
014	23	040	53	070	83
015	24	041	54	071	84
016	25	042	55	072.01	85
017	26	043	56	072.02	86
018	27	044	57	072.03	87
019	28	045	58	072.04	88
020	29	046	59		
021	30	047	60		

The ethnic groups in the 1986 census were largely of European origin. The eight ethnic divisions are as follows: British², French³, Italian, Dutch (Netherlands), German, Polish, Ukrainian, and Other Single Origins⁴. This clear European bias is a slight limitation to the study.

After obtaining the data, each census tract's ethnic group ratios were calculated. Every ethnic group had one census tract in which they attained their maximum proportion of the census tract's population. The eight census tracts containing these maximum ethnic percentages, are highlighted in Map 2.

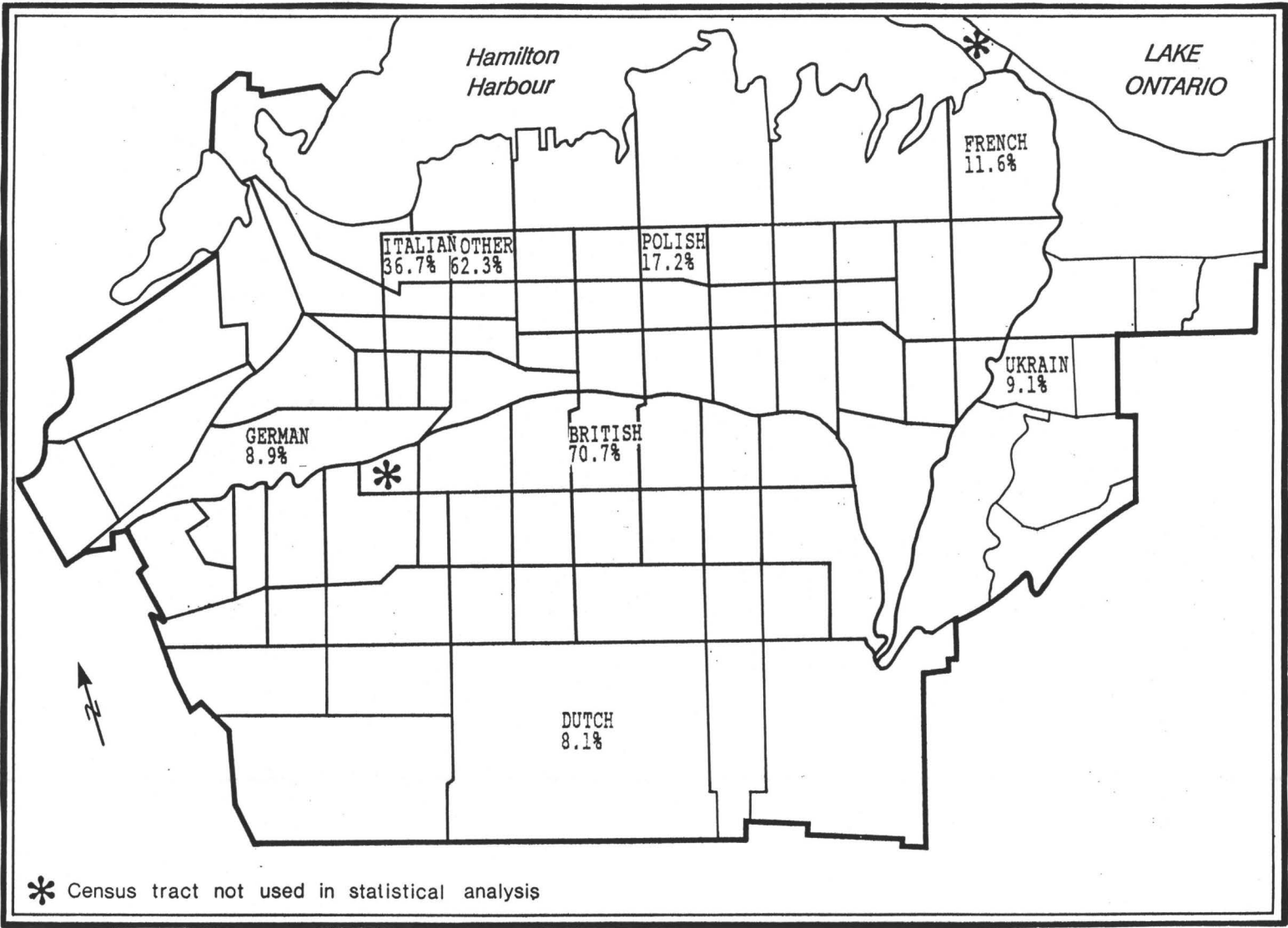
Following the calculation of the above descriptive statistics, the Location Quotient (LQ) and the Segregation Index (SI) values were derived. The description of these two techniques is located in the appendix. The latter was calculated for each group in each census tract and an overall segregation index was determined. The former was also calculated for each census tract and for each ethnic group.

². Census Canada: ...includes all single origins of English, Irish, Scottish, Welsh, British, not included elsewhere and Other British.

³. ...Includes the single origins of Acadian, French Canadian, and Quebecois.

⁴. (Author's Definition) All other major groups in the world (i.e. African, Asian, ...ect.), including European ethnic groups not mentioned in 2 and 3 (e.g. Portuguese).

MAP 2: Location of each ethnic group's maximum census tract proportion.



Utilizing the LQ results, each ethnic group's mean, standard deviation and variance were also computed. Thus, discussions could be generated on the central tendencies, or more statistically significant, the outliers, for each of the ethnic groups. These results are shown graphically in Maps 3 to 10 and Figures 11 to 18.

Location quotients relate to the degree a subculture of society's distribution, departs from an expected mean. The LQ values shall show insight as to where ethnic groups are either rare or concentrated in Hamilton. The SI measurements will then relate to which ethnic groups are 'tolerated' by other groups and those that are 'excluded'. For example, the British may not usually live proximal to the Dutch, but may often live near Germans.

Once all the SI's were calculated, a **segregation matrix** was formed. Deriving this matrix involved a few steps. One at a time, each ethnic group was isolated and for each census tract, versus every other ethnic group, their SIs were calculated. These values were placed in vertical columns, each one representing a single ethnic group. Then the mean for each column was derived. After obtaining these values for each ethnic group, the matrix was formed (Table 2).

The matrix values represent the data used for the Segregation Graphs (Figures 3 through 10). The mean of each column represents the data used for the Overall Segregation graph (Figure 2).

TABLE 2: Segregation index (SI) matrix.

	BRITISH	FRENCH	ITAL.	DUTCH	GERM.	POLISH	UKRAIN.	OTHER
BRITISH	0.0	20.1	26.3					
FRENCH	20.1	0.0						
ITALIAN	26.3	32.0	0.0					
DUTCH	29.0	41.5	37.0	0.0				
GERMAN	18.0	29.8	31.7	29.0	0.0			
POLISH	31.8	34.8	34.2	48.0	38.1	0.0		
UKRAIN.	27.9	33.4	33.1	45.6	31.5	27.3	0.0	
OTHER	20.1	25.4	24.5	35.4	27.6	36.3	36.7	0.0

After deriving each ethnic group's LQs, the Scatter Graphs were produced (Figures 11 through 18). The location quotients portray what extent each census tract's concentration of an ethnic group compares to the mean city-wide concentration. Thus, areas with an under or overrepresentation of certain ethnic groups can clearly be seen. The maps of Hamilton (Maps 3 through 10) utilize the same data as the Scatter Graphs, and depict where ethnic groups are exceptionally concentrated or non-existent.

All calculations were determined using the Quattro Pro (2.0) software package.

CHAPTER 4: DATA ANALYSIS AND RESULTS

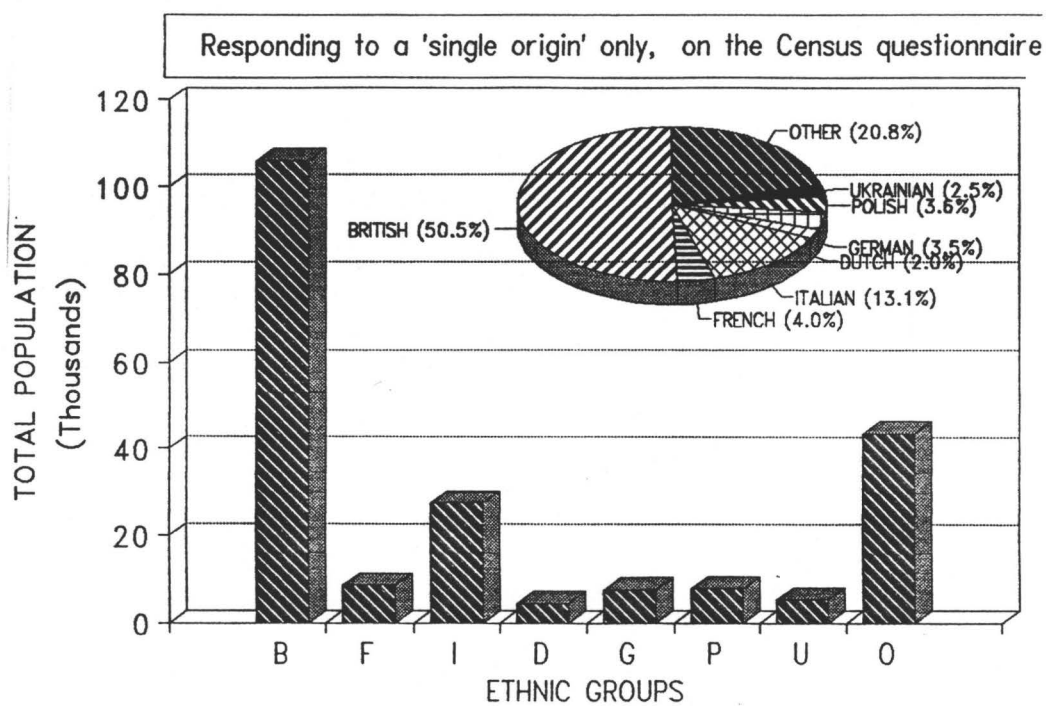
4.1: PRELIMINARY RESULTS - Proportions

The largest ethnic group in Hamilton is the British at 50.5%. The Italians are second at 13.1% (Figure 1). The 'Other Single Origin' group, which is an amalgamation of many ethnic groups, consists of 20.8% of Hamilton's population. Clearly then, this latter group characterizes a considerable portion of the city's ethnic composition. The other five groups together, only encompass 15.6% of the population.

After calculating the proportions of each of the ethnic groups, in all of the census tracts, it was noticed certain areas had interesting characteristics. Although the absolute values varied, each ethnic group had one census tract in which, they attained their maximum proportion of the census tract's population (Map 2).

As can be clearly seen from Map 2, these maximum ethnic proportions spanned the breadth of the city. The British and Dutch were the only groups who had their optimum census tract percentages on the mountain. The British being located in a census tract which borders the edge of the escarpment (021) and the Dutch were located in a peripheral census tract, 001.03. Germans were located in census tract 017, which is a high-class, neighbourhood surrounding Aberdeen

FIGURE 1 : Population of ethnic groups in Hamilton, 1986.



Avenue. Both the Italians and the "other's" are located in contiguous census tracts, near the CBD of the city (064 and 063, respectively). The Polish's maximum census tract proportion, is located at census tract 060, in the so called, 'North-End' of the city. Both the French and Ukrainians are located in the extreme eastern census tracts of the city, 070 and 026.01, respectively.

As in this study, Rahman in her 1977 paper, noted where the concentrations of ethnic groups were located in Hamilton. She utilized data from various 1971 census documents. On page 32, she produced a map which resembles this paper's, Map 2. Rahman's map clearly shows there is still significant locational correlations with the present ethnic spatial patterns. In fact, the Italians, Dutch and Polish maximum census tract concentrations in 1971, are located in the exact same census tracts as for this paper's, Map 2. Therefore, the populations of these ethnic groups, has remained static for at least the last 15 to 20 years.

Upon closer inspection of the legend for Rahman's map, the above three ethnic groups still comprise almost the exact same proportions as they did in 1971; the Italians in census tract 064 (in 1971- 37 to 47%, compared to 36.7% in 1986), the Dutch in census tract 001.03 (from 1 to 9% in 1971, to 8.1% in 1986), and the Polish in census tract 060 (in 1971- 17 to 25%, compared to 17.2% in 1986).

Furthermore, Rahman has produced a number of maps showing the spatial patterns of many different ethnic groups in Hamilton (i.e. similar to this paper's Maps 3 to 10). With her maps, there is again strong correlations between the spatial patterns and percentages of ethnic groups in 1971 and with the location quotient results for this paper. This shall be further discussed in Section 4.3.

4.2: RESULTS OF SEGREGATION INDEX CALCULATIONS (SI)

The Dutch have the highest overall SI, (37.9) and the British the lowest, (24.7) (Figure 2). It is interesting to note that these ethnic groups have the opposite proportions of the city's population (i.e. the British have the highest proportion of the population and the Dutch have the lowest). The range of segregation indices between all of the ethnic groups is only 13.2.

British are the least segregated from the Germans. They are the most segregated from the Polish (Figure 3). The British mean segregation index is (24.7).

The French are the least segregated from the British and the most segregated from the Dutch (Figure 4). Their mean segregation index is, 31.0.

The Italians are the least segregated from the 'Other Single Origins' and again the most segregated from the Dutch (Figure 5). The Italian mean segregation index is, 31.6.

FIGURE 2: Overall segregation graph for all ethnic groups.

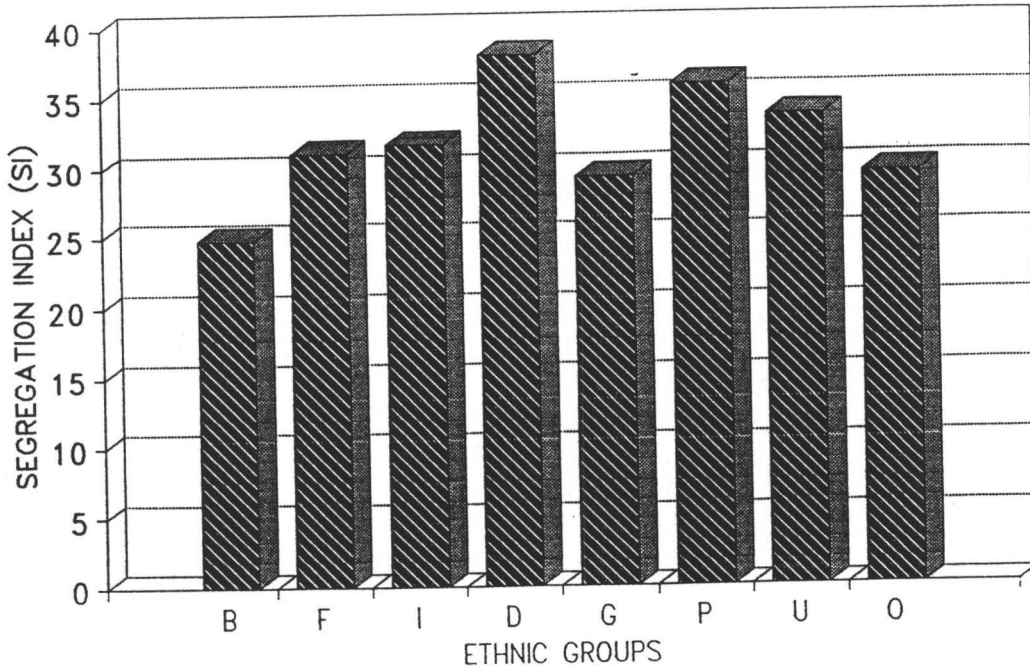


FIGURE 3: Segregation indices: British vs all groups.

F- French I- Italian D- Dutch G- German P- Polish U- Ukrainian O- Other

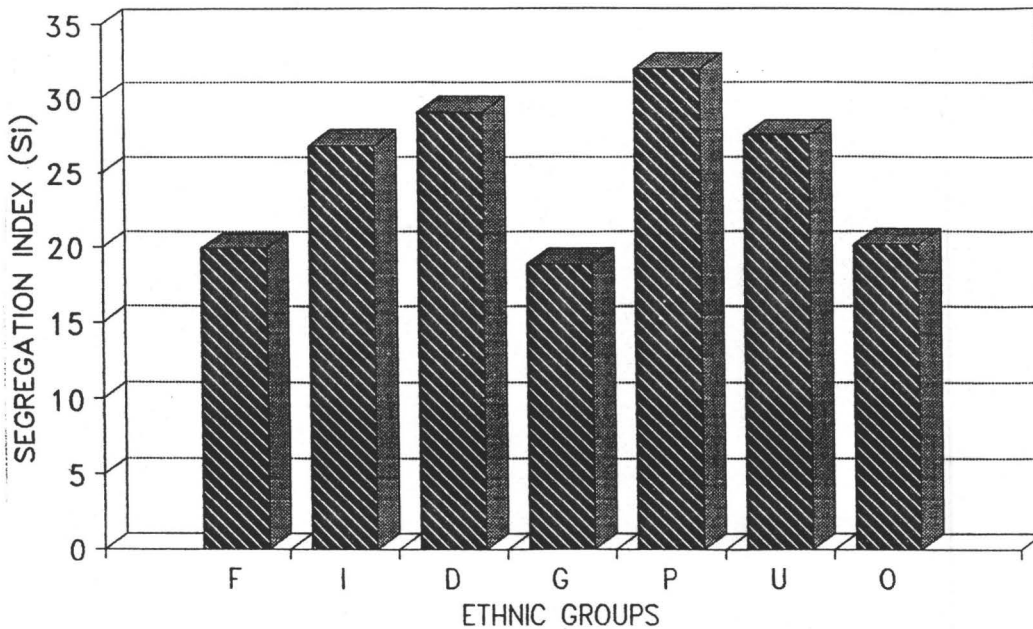


FIGURE 4: Segregation indices: French vs all groups.

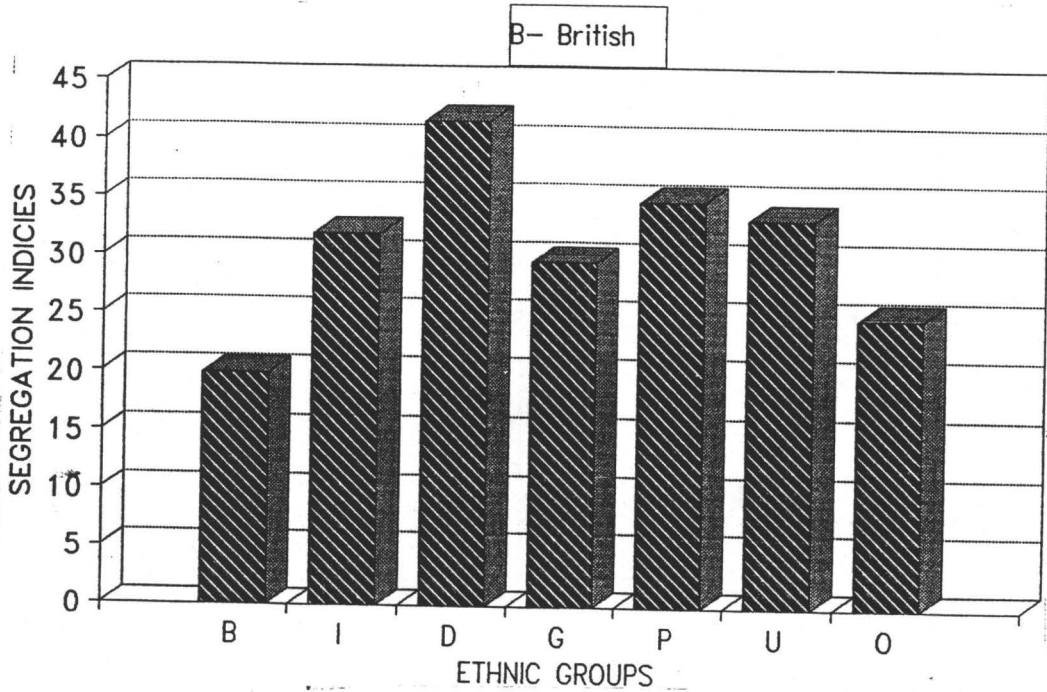
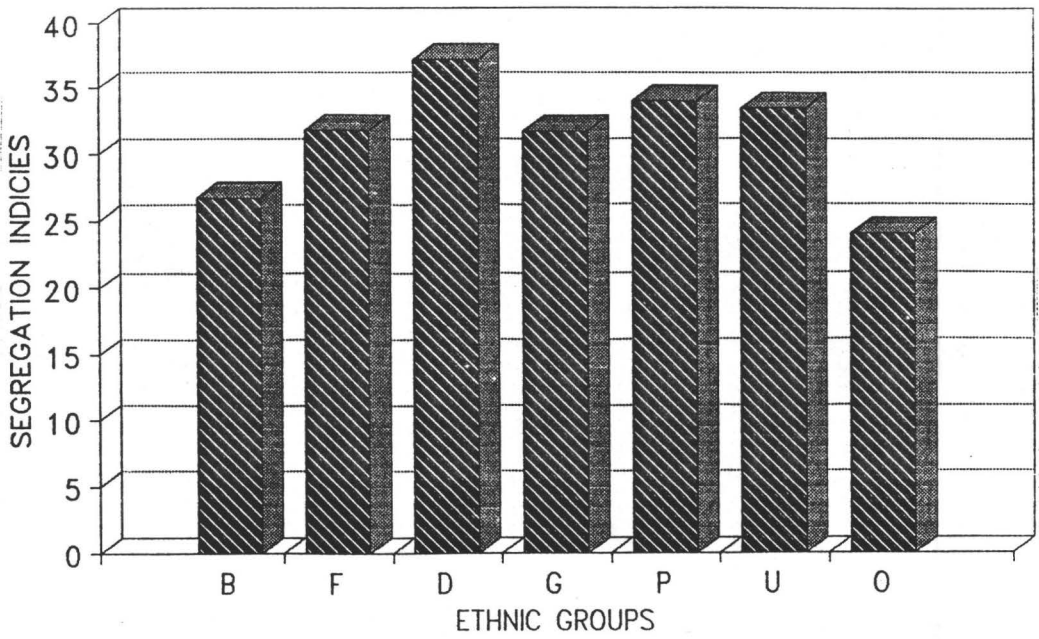


FIGURE 5: Segregation indices: Italian vs all groups.



The Dutch have the highest overall segregation, although their lowest segregation values are with the Germans (Figure 6). They are the most segregated from the Polish. Their mean segregation index is, 37.9.

The Germans are the least segregated from the British and most from the Polish (Figure 7). Their mean segregation index is, 29.3.

The Polish are the least segregated from the Ukrainians and also the most from the Dutch (Figure 8). Their mean segregation index is, 35.8.

The Ukrainians are the least segregated from the British and again the most from the Dutch (Figure 9). Their mean segregation is, 33.6.

The 'Other' group are the least segregated from the British and the most from the Ukrainians, however, they are also highly segregated from the Polish and the Dutch (Figure 10). Their mean segregation index is, 29.4.

After calculating all of the above SI's, the segregation matrix was formed (Refer to Chapter 3.2). The mean for each of the columns in Table 2 was calculated and the Overall Segregation graph was produced (Figure 2).

FIGURE 6: Segregation indices: Dutch vs all groups.

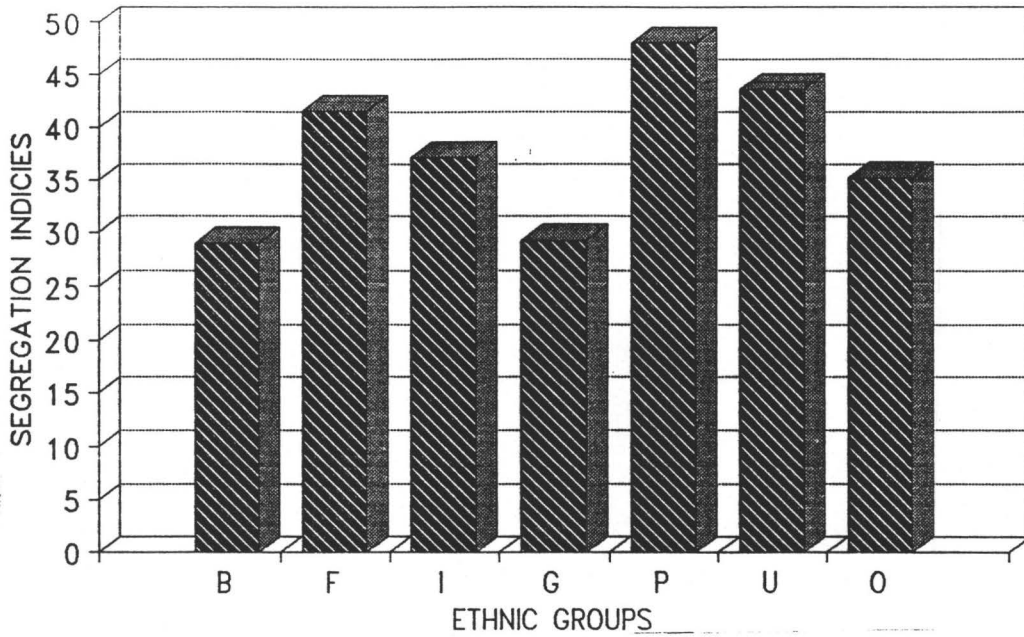


FIGURE 7: Segregation indices: German vs all groups.

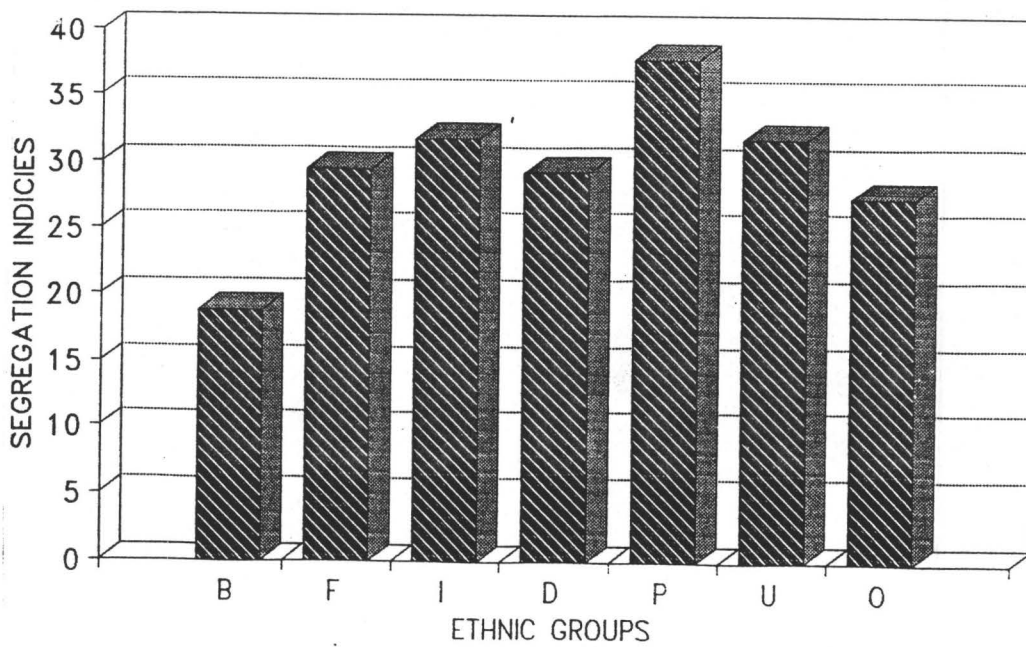


FIGURE 8: Segregation indices: Polish vs all groups.

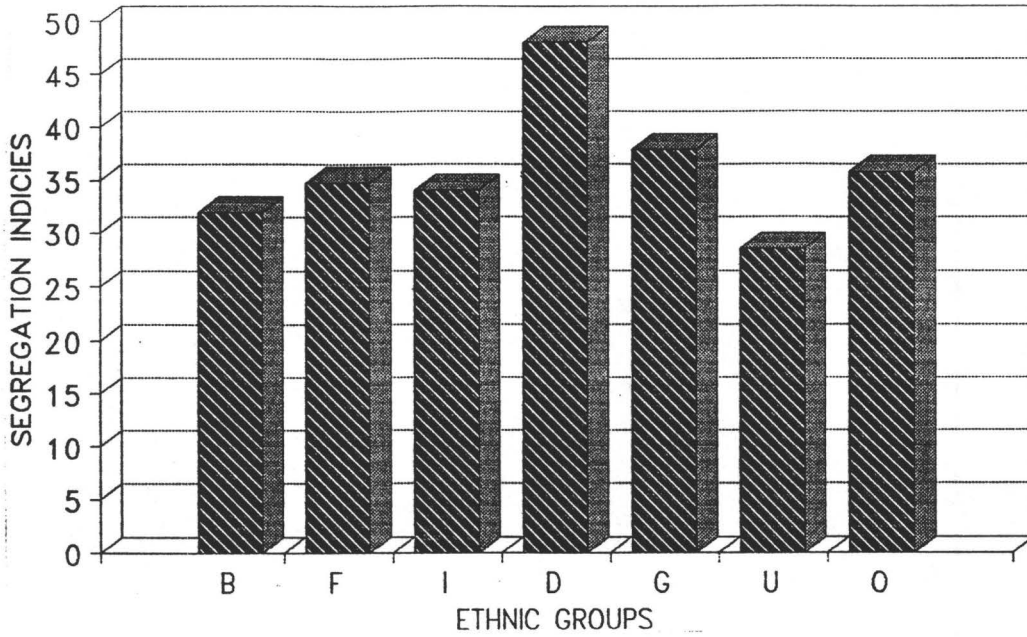


FIGURE 9: Segregation indices: Ukrainians vs all groups.

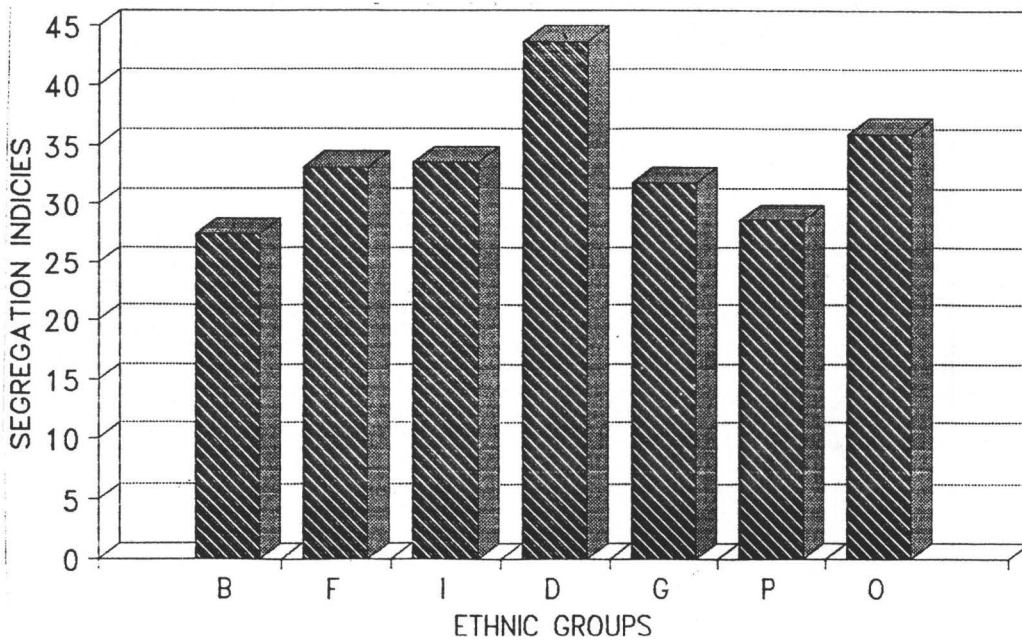
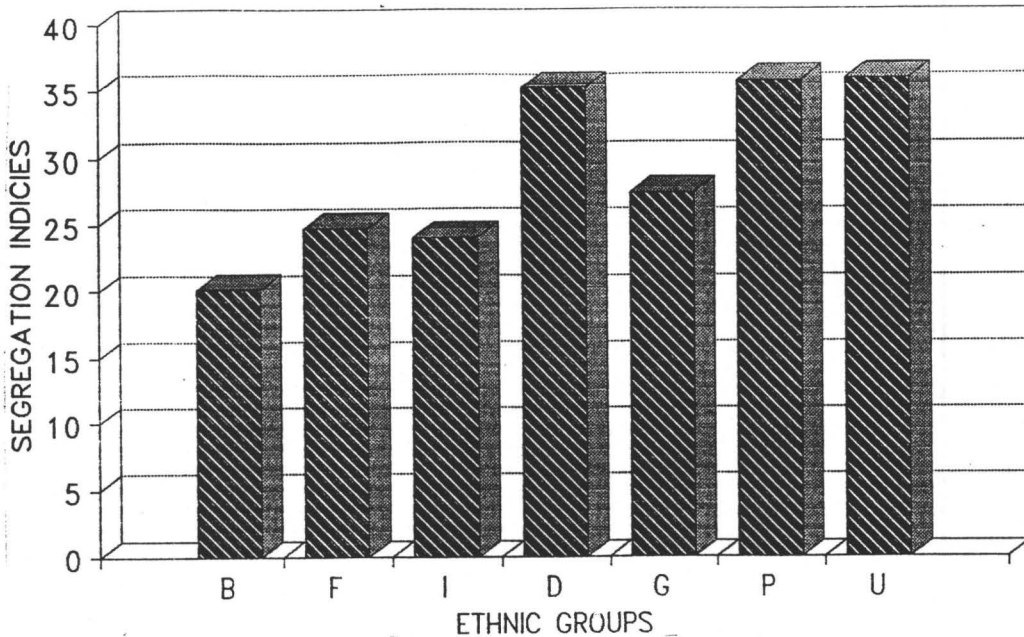


FIGURE 10: Segregation indices: 'Other' vs all groups.

4.3 RESULTS OF LOCATION QUOTIENT (LQ) CALCULATIONS

The British Scatter Graph (Figure 11) clearly shows that they have a very centrally-oriented population distribution (i.e. most of their LQs are located close to their mean). Therefore, in much of the city the British are neither, highly concentrated nor, underrepresented. This result could be related to the fact that the British are the most populous group in Hamilton and therefore, there is a high probability of having a large proportion of them in each census tract. Map 3 shows that only one census tract (021), contains a population of British over two standard deviations from their city-wide mean. This census tract correlates with

MAP 3: British Location Quotient (LQ) results.

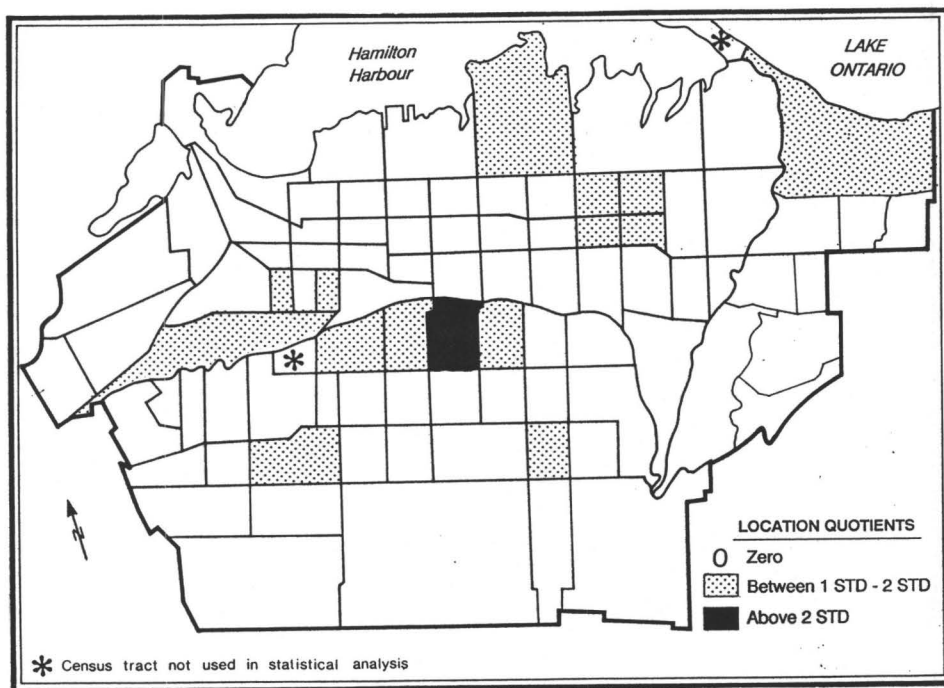
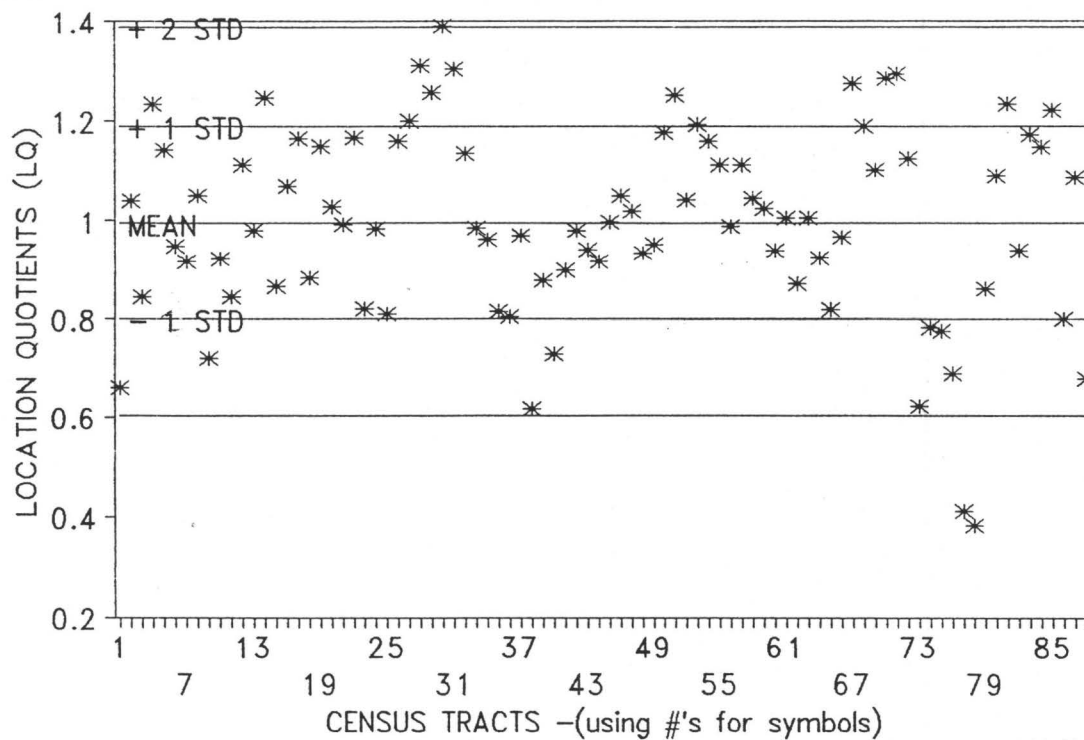


FIGURE 11: Scatter graph for British Location Quotients (LQ).



Map 2, which shows the highest proportion of British in the city, also located in this same census tract.

The French are a different case altogether. By referring to Map 4, it can easily be seen that the French are overrepresented along the harbour's census tracts, and considerably underrepresented on the mountain. There are fifteen census tracts downtown where the French are overrepresented by at least one standard deviation and only one on the mountain. Referring again to Rahman's paper, census tract 032 contained one of the city's highest proportions of French (9.51 to 11.5%). This same census tract is one of the three (Map 4) which has a representation of French above two standard deviations. Two census tracts in the city, 016 and 072.01, have a zero population of French.

Italians have a few zones where they are overrepresented. Census tracts in the central portion of the city, bounded by Burlington Street to the north and Cannon to the south, have a strong overrepresentation of Italians (Map 5). Both eastern fringes of the city; mountain and downtown, have high proportions of Italians. Rahman's findings for the Italian's, again produce spatial patterns that resemble those of this study.

Map 6 clearly shows that the Dutch are very clustered on the mountain's census tracts. The three census tracts with representations higher than two standard deviations are located on the mountain. Census tract 001.03 has an extremely

MAP 4: French Location Quotient (LQ) results.

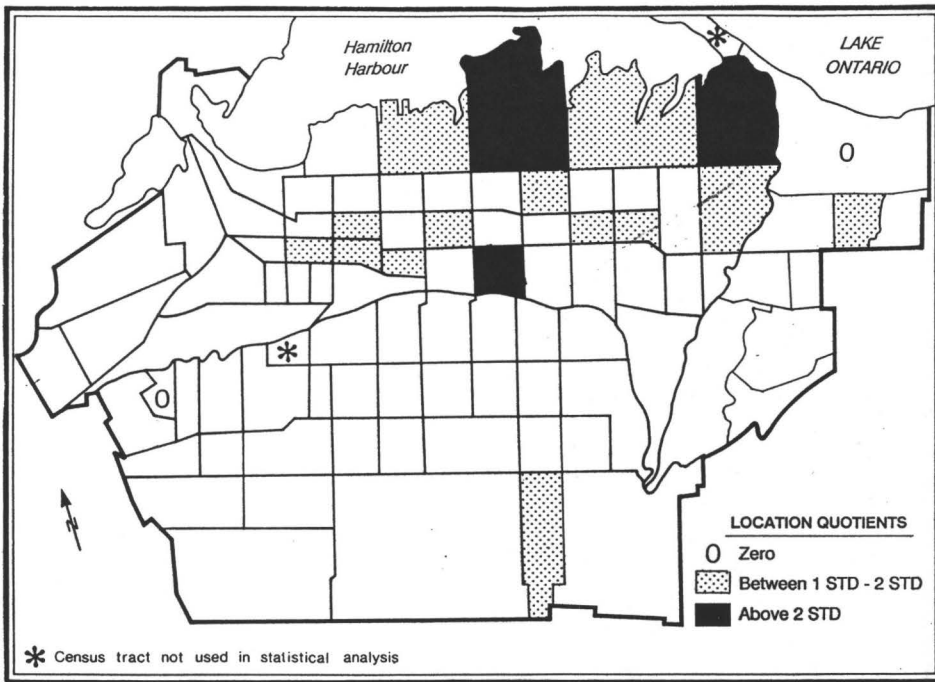
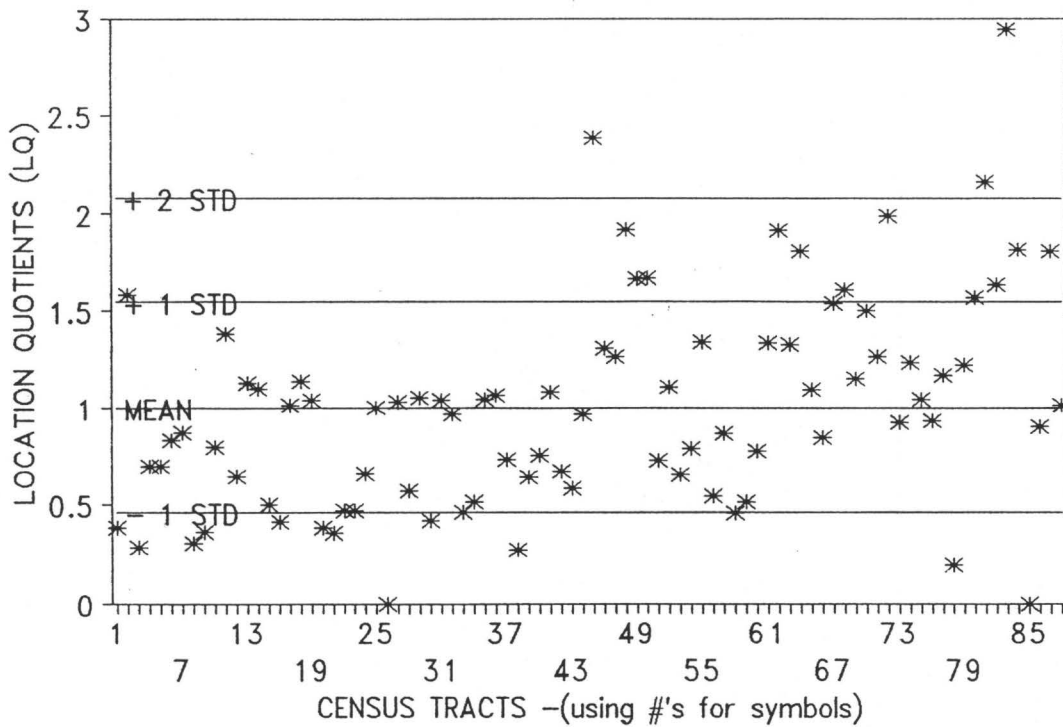


FIGURE 12: Scatter graph for French Location Quotients (LQ).



MAP 5: Italian Location Quotient (LQ) results.

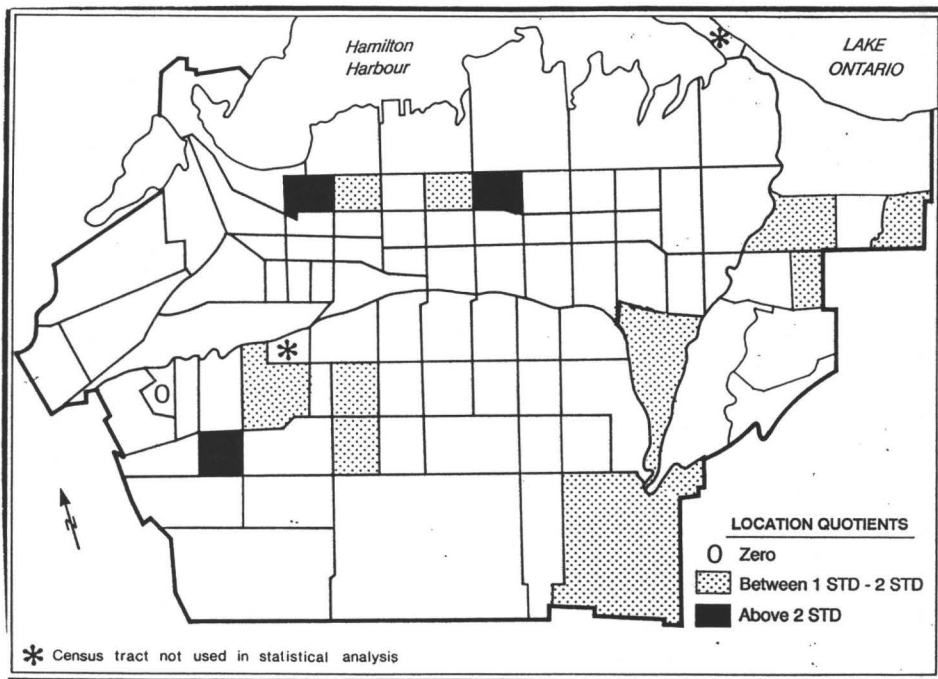
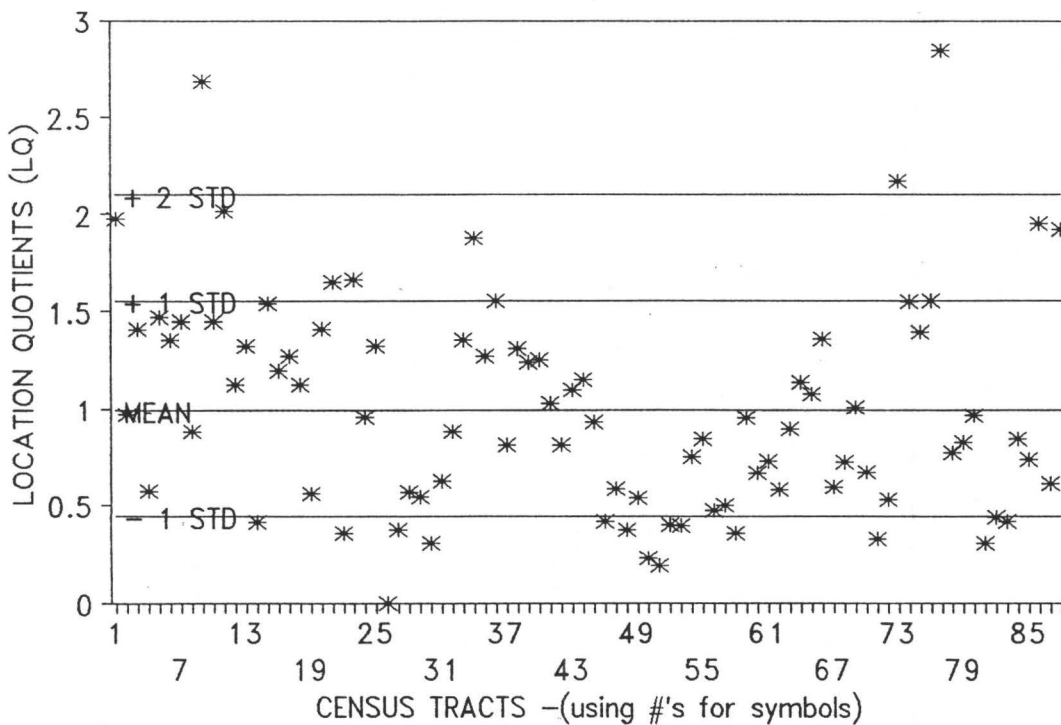


FIGURE 13: Scatter graph for Italian Location Quotients (LQ).



MAP 6: Dutch Location Quotient (LQ) results.

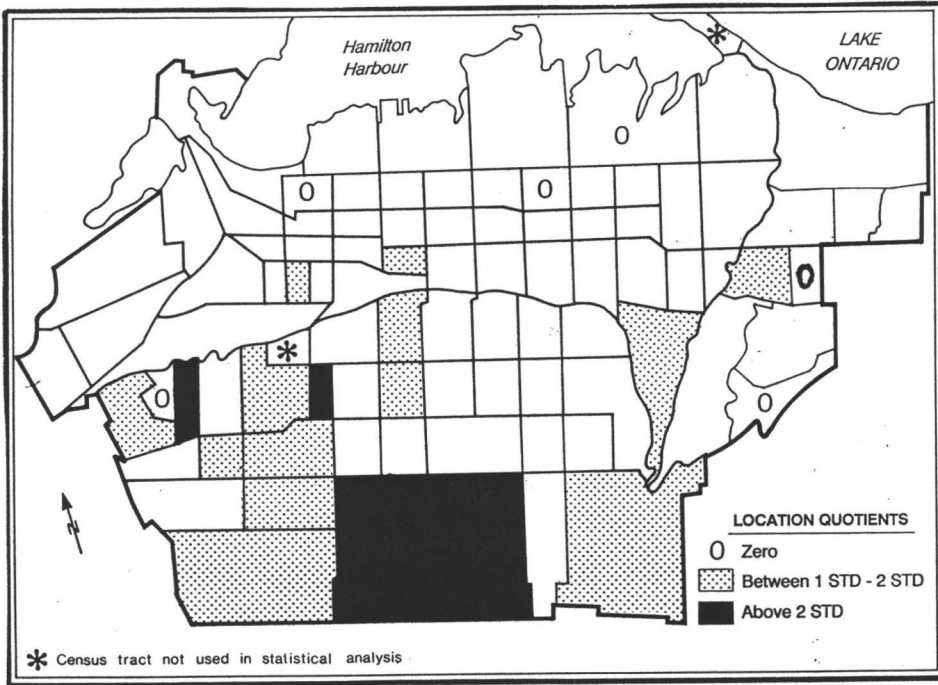
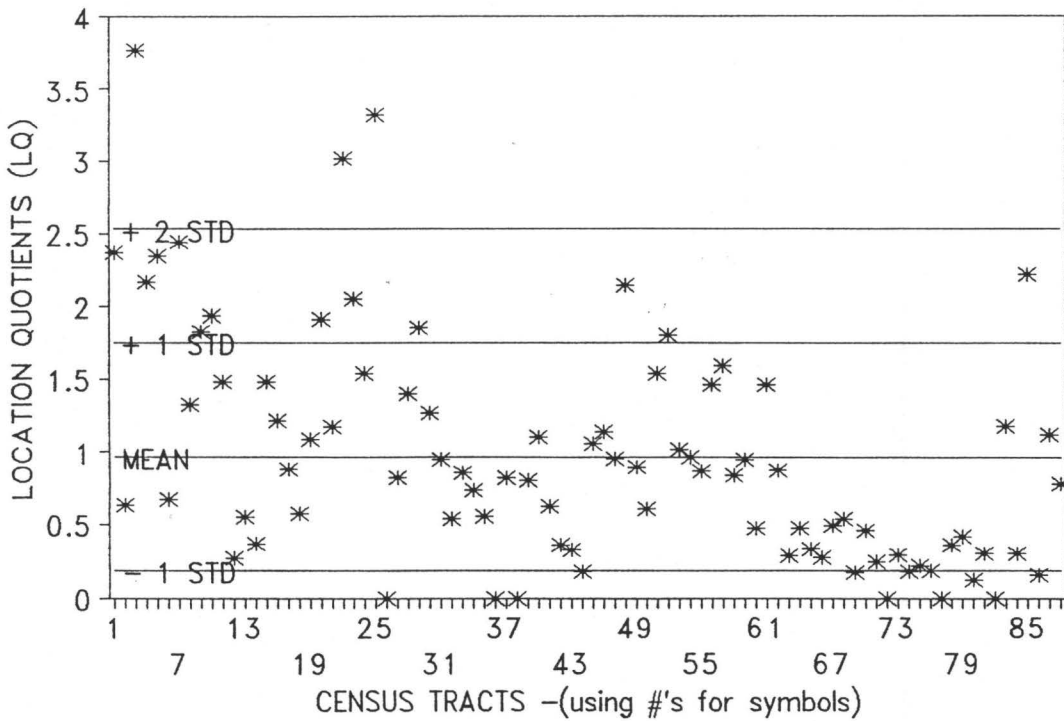


FIGURE 14: Scatter graph for Dutch Location Quotients (LQ).



high location quotient of 3.77. As stated in Section 4.1, this census tract is the same as the one with the highest proportion of Dutch in Rahman's paper. However the Dutch only constitute a small portion of Hamilton's population and therefore, there are also many census tracts that have very low to zero populations of Dutch. These census tracts are clearly shown in Map 6 to be located across the whole downtown. There are six census tracts in the city where there are no Dutch present. This characteristic is especially true with the census tracts along the Harbour.

The Germans have very significant representations in Westdale and the extreme western-mountain census tracts (Map 7). There is one census tract, 068, that has a very high representation of Germans and it is located all by itself. In fact, all the areas surrounding it have low representations of Germans. From their Scatter Graph (Figure 16), it can be clearly seen that most of the census tracts in Hamilton have populations of German's very close to the mean (i.e. between under one standard deviation on either side of the mean).

A Polish 'corridor' seems to be apparent in the centre of the city. Beginning with census tracts 023 & 024 on the mountain and extending to the Harbour in an almost perfectly straight line, are prominent overrepresentations of Polish. The location quotient values for these census tracts are extremely high; ranging from 2.78 in 031 to 4.85 in 060.

MAP 7: German Location Quotient (LQ) results.

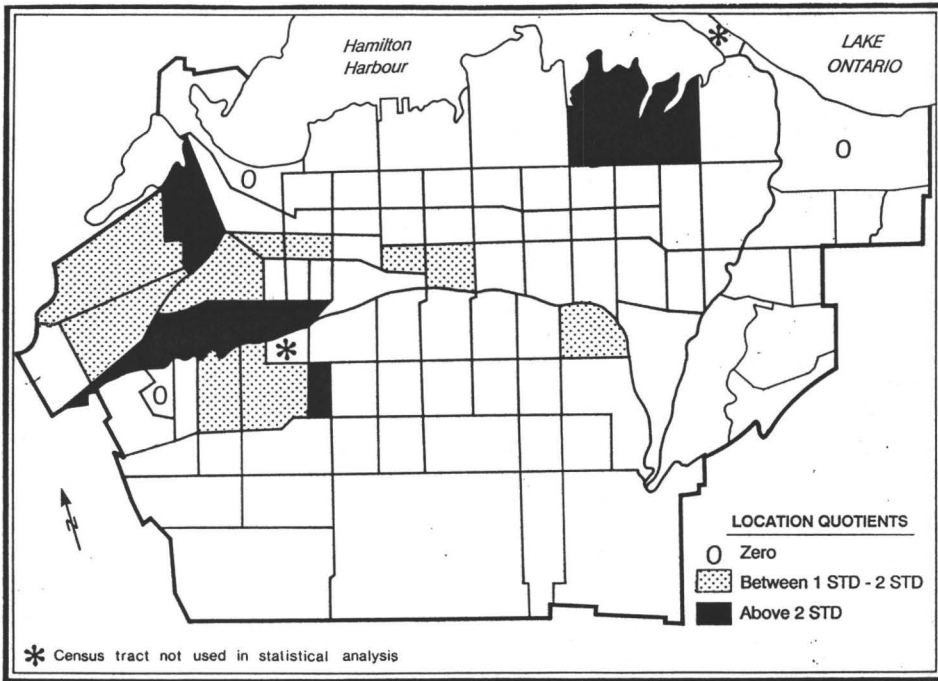
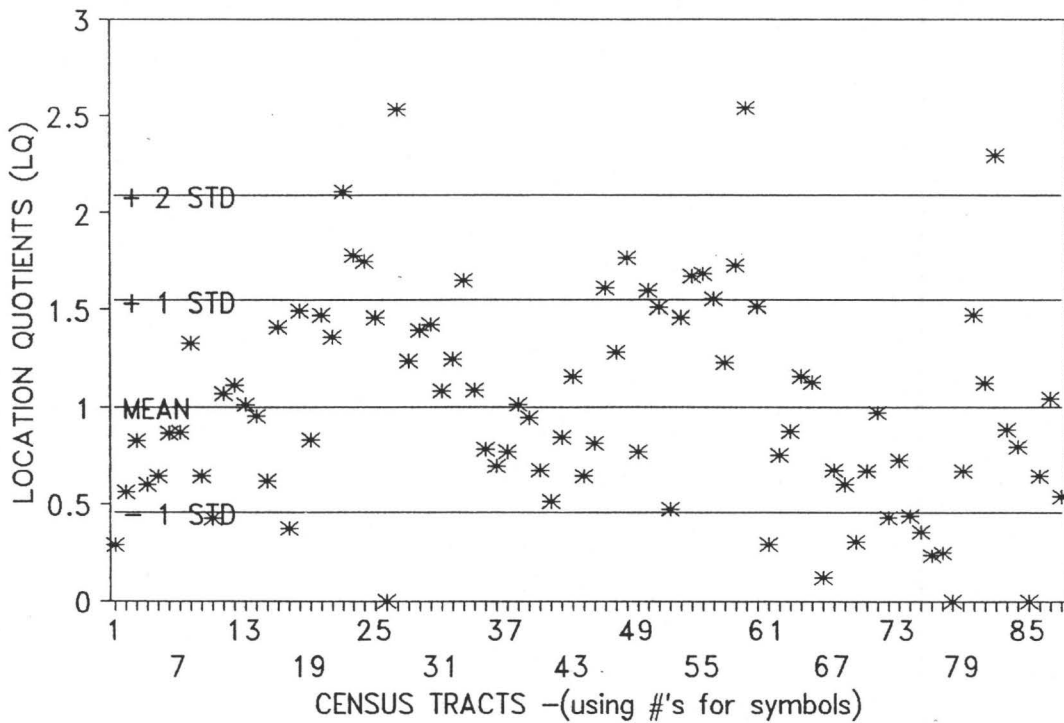


FIGURE 15: Scatter graph for German Location Quotients (LQ).



Map 8 shows further census tracts in the eastern section of the city, having high concentrations of Polish. It can also be seen from Map 8 that there are very low proportions of Polish on the mountain. This characteristic is consistent with the SI index findings between the Dutch and the Polish. These two groups have the highest segregation values between two groups, and therefore one could state, where the Polish are located the Dutch are not, and vice versa. Since the highest proportions of Dutch are found on the mountain and there are only a small number of Polish found there. Following this idea, the highest proportions of Polish are found downtown and is a very low to zero Dutch presence.

The Ukrainians show a clustering pattern somewhat similar to the Polish. Again, this factor becomes apparent in the fact that the Polish and the Ukrainians show very low SIs with each other. Therefore, one could state that where the Ukrainians are located, the Polish are probably located close by, and vice versa. Meanwhile, the CBD area, Westdale and western-mountain census tracts show underrepresentations of Ukrainians (Map 9).

The 'Other' ethnic group, even though it is a conglomeration of various ethnic groups, has the second largest proportion of Hamilton's population. Therefore, its LQ distribution (Figure 18), resembles that of the British (i.e. the majority of the census tracts in Hamilton have representations of the 'Other' that are between one standard

MAP 8: Polish Location Quotient (LQ) results.

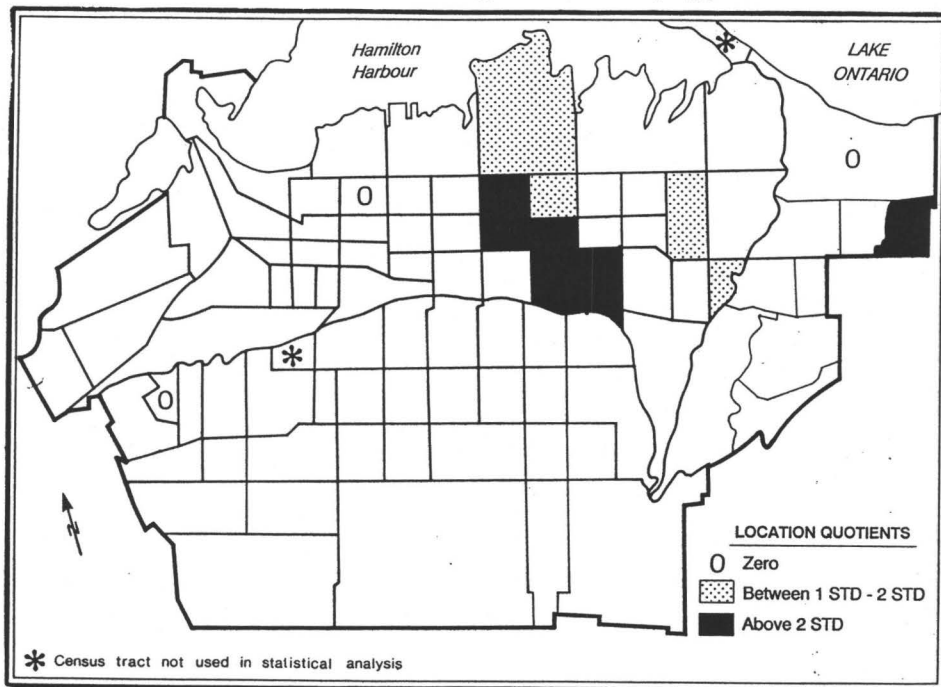
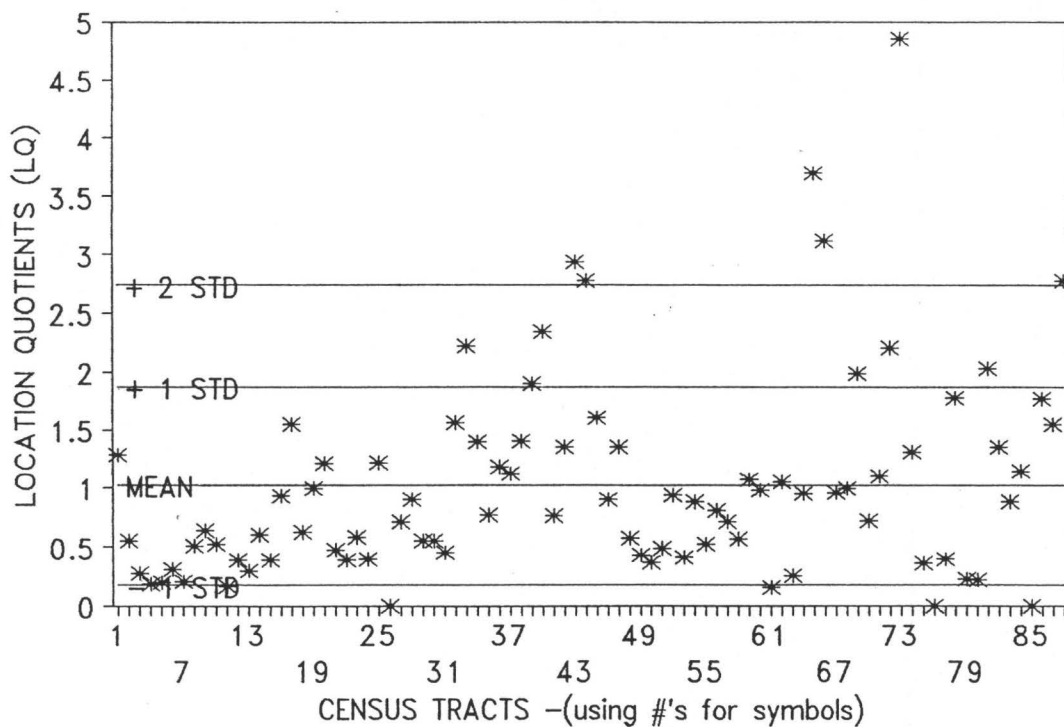


FIGURE 16: Scatter graph for Polish Location Quotients (LQ).



MAP 9: Ukrainain Location Quotient (LQ) results.

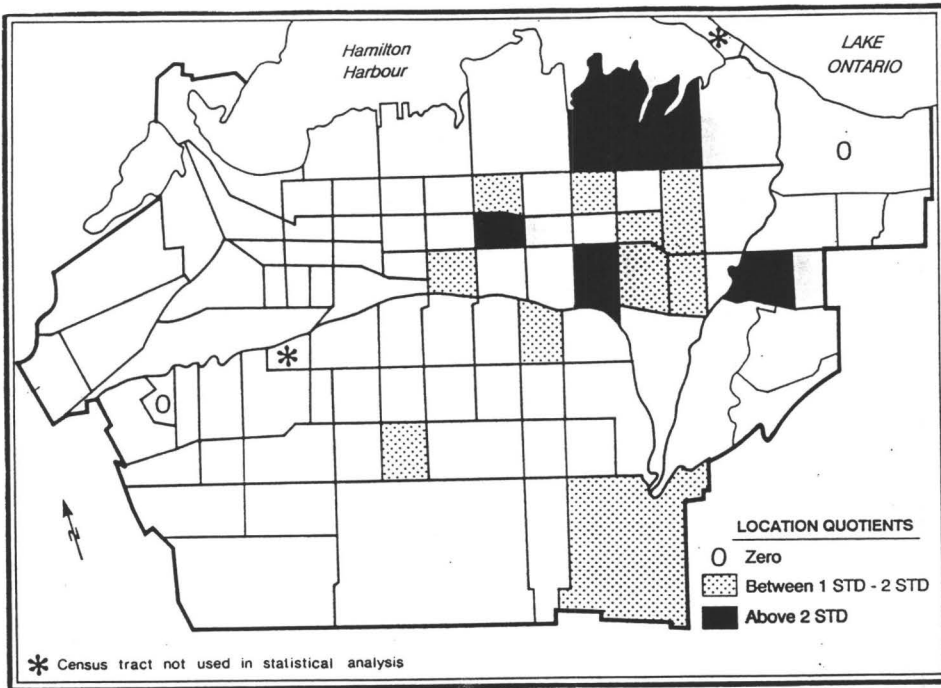
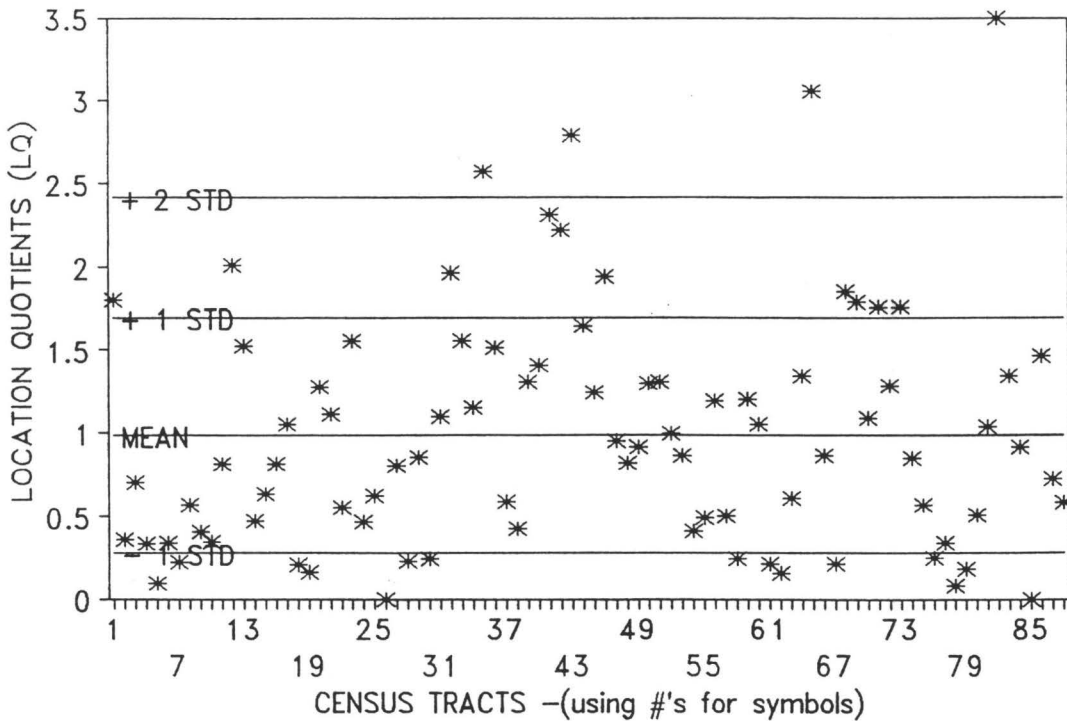


FIGURE 17: Scatter graph for Ukrianian Location Quotients (LQ)



MAP 10: 'Other' Location Quotient (LQ) results.

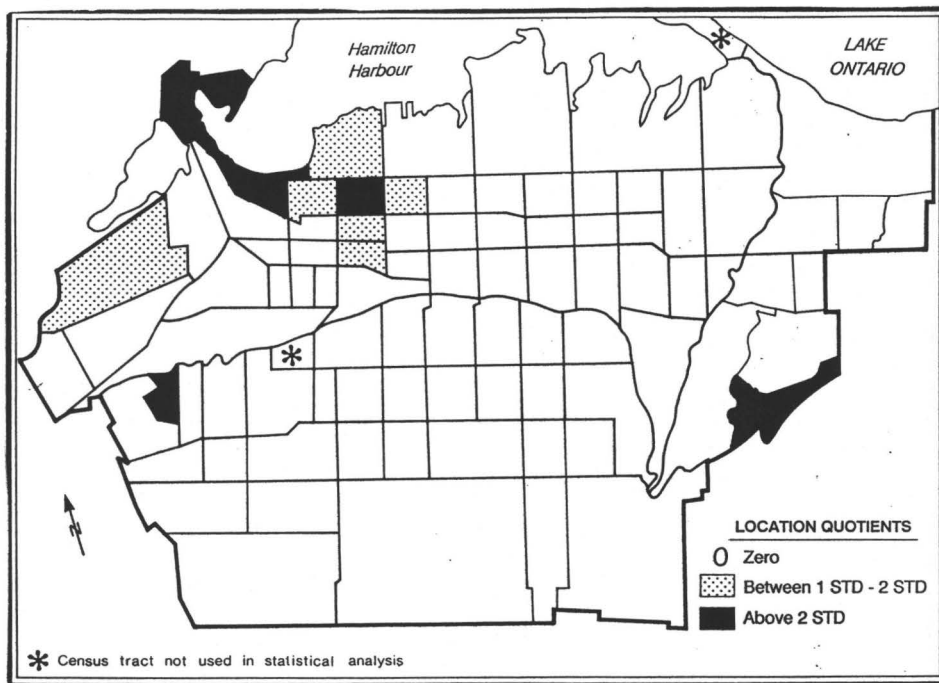
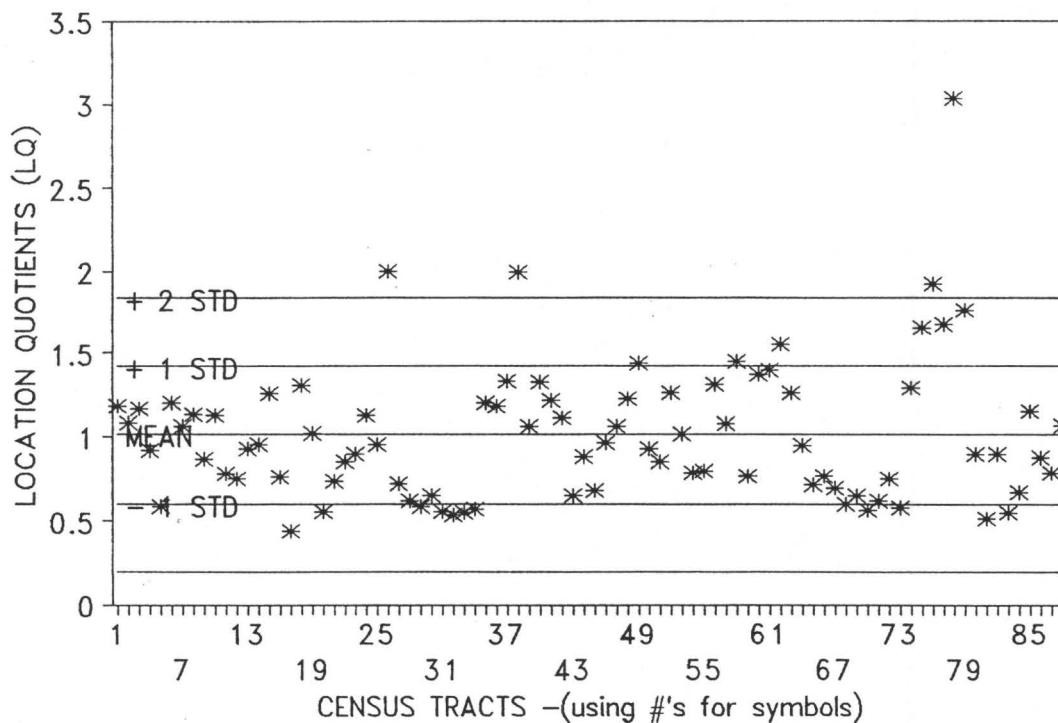


FIGURE 18: Scatter graph for 'Other' Location Quotients (LQ).



deviation on either side of the mean). The census tracts with the highest LQ results for the 'Other' are census tracts surrounding the CBD (Map 10). One interesting phenomenon occurs at census tract 016. This zone is populated only with British and 'Others', all of the other six ethnic groups have zero populations in this census tract. The LQ representation of 'Others' here is over two standard deviations from the mean (2.0). After referring to Rahman's paper once again, this census tract in 1971 had the highest proportion of Asians in the city. Although Asians are not ~~an~~ one of the individual ethnic groups used in this paper, they are included in the 'Other Single Origin' ethnic group. Therefore if one was to extrapolate from this fact, in 1986 this census tract might still have a high concentration of Asians, hence the extremely high LQ result.

CHAPTER 5 - CONCLUSIONS

Hamilton's predominantly industrial economy is of prime importance when discussing the ethnic groups present in the city. The steel companies were not the only attractive assets of Hamilton, they just initiated the attraction. The economic boom associated with the expansion of the industrial market in southern Ontario, created in turn, economic development in many other sectors of the economy. It is the combination of these two factors, plus the 'lenient' nature of Canadian immigration policy during this century, that has allowed people from all over the world to gain economic independence in Hamilton.

Once a person from another culture gained a residence in Hamilton and obtained a permanent job, they often petitioned for other family members to do the same. Repeatedly, these newcomers lived in the home of the initial immigrant. Tied in with this characteristic is the fact that immigrants try to decrease 'culture shock' by either maintaining their cultural traits or by living in areas of people with the same background.

However, this is not always a choice. The many constraints, both direct and indirect, greatly contribute to the spatial dispersion or clustering of ethnic groups as well. Directly, new immigrants are often relatively poor and if they cannot speak English, are limited to the jobs they can attain.

Thus, they are confined to the lower-class, inner-city core of Hamilton (Burgess, 1925). Indirectly, government bureaucracies and real estate agents, persuade these new immigrants to live in areas where they will 'best fit in'. This is called steering and its existence can often augment the concentration of ethnic groups.

All of the above factors were and still are, in effect in Hamilton and have led to the present ethnic configuration. This is not a simple and clear cut phenomenon and each ethnic group has its own story.

The British, since they are part of the core-culture, are the least spatially constrained and therefore are located all over the city. The French seem to have been compelled to live in the poorer, northern census-tracts of the city and due to their small numbers they have not developed a major French-nucleus. The Italians are the second largest ethnic group in Hamilton and as such, they have a more complicated spatial pattern. At first, most of them were limited to the poorer, inner-city census tracts. Since then, many of them and their offspring, have improved their status enough to move to more affluent areas of the city. They have even developed an Italian core in the west-end of the mountain. Nevertheless, the Italian presence is still very strong downtown. The Dutch have tended to avoid the downtown area of the city altogether. Their highest concentrations are present on the mountain and often in its periphery. This is probably due to the fact that

they have never had any strong ties with the steel industry and therefore there has been no incentives for locating close to the factories. The Germans are similar to the Dutch. They have not been greatly attracted by the steel companies either. Many people of German heritage in Hamilton, have increased their S.E.S. and have moved to the more affluent Westdale and Aberdeen Ave. sections of Hamilton. Many of the first Polish people in Hamilton were attracted to the manufacturing centre of the city, to work as labourers. Therefore, they located close by, in the lower-class census tracts surrounding the steel companies. Since then, there has developed an extremely concentrated Polish core area in Hamilton's north and east ends. The Ukrainians have developed their population centres in spatial patterns very parallel to that of the Polish. Therefore, it can be assumed that they also had affiliations with the heavy industrial core of the city. The existence of a significant Ukrainian presence on the mountain, is one locational characteristic that alters its pattern from the Polish. It is difficult to draw conclusions from the spatial patterns of the 'Other Single Origin's. Since they are an agglomeration of many ethnic groups, any theories accounting their locational patterns is tenuous. However, they comprise the second largest proportion of Hamilton's population and their pattern requires explanation. This group lives fairly close to areas with high proportion of Italians. This could result from the fact that included in this group, is all the

people of the world who speak Spanish or Portuguese, languages somewhat resembling Italian. From pure observational techniques, it can clearly be seen in Hamilton, that the Portuguese presence is high and is increasing. Furthermore, these ethnic groups and also the Asians, are relatively new immigrants and as such are often restricted to the lower-class sections of the city (Of which, still contain a high proportion of Italians).

In summation, this paper has used a macro-scale examination of the spatial patterns of Hamilton's ethnic population and yet, a micro study (or neighbourhoods) would yield more explicit results. Nevertheless, this scale of analysis is not presently available. Therefore, this paper serves as a meaningful foundation to any future neighbourhood-scale studies which might be conducted on Hamilton's ethnic composition.

APPENDIX

CALCULATION OF LQ and SI

- using the British vs French as examples

A) SEGREGATION INDEX (SI):

THREE STEPS.

$$1. \quad X_{ct}^B = \frac{P_{ct}^B}{TP_c^B} \times 100 \quad X_{ct}^F = \frac{P_{ct}^F}{TP_c^F} \times 100$$

P_{ct}^B - population of British in census tract (P_{ct}^F - French)

TP_c^B - total population of British in city (TP_c^F - French)

X_{ct}^B - census tract's proportion of the city's proportion of British (X_{ct}^F - French).

- this is calculated for each census tract, and for each group, keeping one ethnic group as the independent variable and all the other groups (one at time), as the dependent variables.

2. The absolute value is derived, between the two calculations from above.

$$| X_{ct}^B - X_{ct}^F | = Y_{ct}^{BF}$$

Y_{ct}^{BF} - absolute difference between the two ethnic group's proportions in the census tract.

3. $\frac{Y_{ct}^{BF}}{2} = SI_{ct}$ Summation of SI_{ct} 's = SI_{total}

2

B) LOCATION QUOTIENT (LQ):**THREE STEPS**

$$1. \quad X = \frac{P_{ct}^B}{TP_{ct}^B} \times 100$$

P_{ct}^B - total population of British in census tract (P_{ct}^F - French)

TP_{ct}^B - total population of census tract

X - census tract's proportion of British

$$2. \quad Y = \frac{P_c^B}{TP_c^B}$$

P_c^B - total population of ethnic group in city

TP_c^B - total population of city

Y - proportion of British in city

$$3. \quad \frac{X}{Y} \times 100 = LQ^B$$

REFERENCES

- Boal, F.W. 1972. 'The Urban Residential Sub-community - A Conflict Interpretation' Area, 4, 161-8.
- Boal, F.W. 1976. 'Ethnic Residential Segregation', in D.T. Herbert and R.J. Johnston (eds), Social Areas In Cities, Volume 1: Spatial Processes and Form, John Wiley, London, pp. 41-79.
- Brenton et al. 1990. Ethnic Identity and Equality: Varieties of Experience in a Canadian City, University of Toronto Press, Toronto.
- Burgess E.W. 1925. 'The Growth of the City' in Park, Burgess and McKenzie. The City.
- Duncan O.D. and Duncan B. 1955a. 'A Methodological Analysis of Segregation Indices', American Sociological Review, 20, pp. 210-17.
- Duncan O.D. and Duncan B. 1955b. 'Residential Distribution and Occupational Stratification', American Journal of Sociology, 60, pp. 493-503.
- Henry F.J. 1974. The Experience of Discrimination: A Case Study Approach, R & E Research Associates, San Francisco.
- Ley D. 1983. A Social Geography of the City, Harper and Row Publishers, Chapter 3, pp. 55-76.
- Lieberson, S. 1963. Ethnic Patterns in American Cities, New York, The Free Press.
- Lieberson, S. 1980. A Piece of the Pie: Black and White Immigrants Since 1980, Berkeley, University of California Press.
- Kantrowitz, N. 1981. Ethnic Segregation: Social Reality and Academic Myth. In Peach et al. Ethnic Segregation in Cities, Billing and Sons Limited, Worcester.
- Nagel, R.W. 1962. Cultural Areas and Neighbourhoods of Hamilton, B.A. Thesis, McMaster University.
- Park R.E. 1926. 'The Urban Community as a Spatial Pattern and a Moral Order', in E.W. Burgess (ed.), The Urban Community, re-printed in Ceri Peach (ed.), 1975, Urban Social Segregation, Longman, London.

Peach et al. 1981. Ethnic Segregation in Cities, Billing and Sons Limited, Worcester, 1981.

Pieno, P.C. 1987. 'The Hamilton Ethnicity Study', Ethnicity in Hamilton: Demographic and Socioeconomic Features, Dept. of Sociology, McMaster University.

Rahman, N. 1977. An Ecological Study of Ethnic Groups in Hamilton, M.A. Thesis, Dept. of Geography, McMaster University.

White, M. American Neighbourhoods and Residential Differentiation, Russel Sage Foundation, New York, Chapter 4, pp. 82-116.